



App No.: 10/718,981

Attorney Docket No.: Q175-US1

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Taison Tan et al.

Serial No.: 10/718,981

Filed: November 20, 2003

For: PRIMARY BATTERY HAVING SLOPED  
VOLTAGE DECAY

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Group No.: 1795

Examiner: Hodge, Robert W.

Docket No.: Q175-US1

MS Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY BRIEF TO EXAMINER'S ANSWER**

This is a Reply to the Examiner's Answer mailed on December 18, 2009. The time for submission of this Reply Brief is determined by 37CFR41.41(a)(1). This section of the CFR provides the Applicant with two months from the date of the Examiner's Answer to submit a Reply Brief. The two month date fell on Thursday, February 18, 2010. As a result, the due date for this Reply Brief is Thursday, February 18, 2010 and this Reply Brief is timely filed.

VII. ARGUMENT**1. Rejection of Claims 1-3, 5-18, 74, 75, and 78 stand rejected under 35 USC §112 for failing to comply with the written description requirement.****CLAIM 1**

Claim 1 stands rejected under 35 USC §112 for failing to comply with the written description requirement. In particular, the Office Action argues that “(t)here is no support in the instant specification for the negative limitation of a “non-zero concentration gradient.”

In response, the Applicant’s Appeals Brief quotes several locations in the specification where non-zero concentration gradients are described. The Examiner’s Answer largely argues that the quoted sections of the specification do not provide the required support because they use the term “can” rather than the term “will.” To see this, note the statement that “just because a concentration gradient ‘can’ be formed does not mean that a concentration gradient ‘will’ be formed.

The problem with this argument is that other locations in the specification explicitly disclose the presence of the concentration gradient. For instance, the paragraph 4 of the Summary section states “The anode also **has** a second medium including a concentration **gradient** of a second active material.” The presence of the term **has** is an affirmative disclosure of the gradient. This same paragraph also goes on to state “**(i)n some instances**, the first medium is positioned such that the concentration of the second active material decreases in a direction moving away from the first medium.” Since the concentration of the second active material decreasing in a particular direction is the description of a non-zero gradient, this quotation teaches that in some instances there is a gradient of the second active material. Claim 1 is directed to the instances where the non-zero concentration gradient is present. For this reason alone the Applicant’s recitation of the non-zero concentration gradient is derived from affirmative teachings in the specification.

Further, the quotations cited in the Appeals Brief do not all rely on the phrase “can.” For instance, note the following sentence: “However, the limits of lithium intercalation distance cause an LiSiO concentration gradient to develop as the thickness of the SiO layer increases.” This sentence is an affirmative statement of a non-zero concentration gradient formation. For

this reason alone the Applicant's recitation of the non-zero concentration gradient is derived from affirmative teachings in the specification.

The argument in the Examiner's Answer goes on to argue that "both passages refer to figures of the instant application that supposedly illustrate the concentration gradient, however, none of the figures referred to therein even remotely show any sort of concentration gradient." However, this argument seems to ignore the teachings in the text. For instance, this statement appears to at least partially be a reference to the following quotation from paragraph 42 of the applicant's specification "the concentration of the second active material can decrease **in the direction of the arrow labeled G in Figure 1A and in Figure 1B.**" As is evident from the below diagrams, **Figure 1A and Figure 1B both include the arrow that is labeled G** and that is cited in this quotation. Accordingly, the specification discloses that the concentration of the second active material decreases in the direction shown in Figure 1A and Figure 1B. Since the concentration of the second active material decreasing in a particular direction is the description of a non-zero gradient, this quotation in view of Figure 1A and 1B teaches a non-zero gradient of the second active material.

For the above reasons, the Applicant's recitation of the non-zero concentration gradient is derived from affirmative teachings in the specification.

**2. Rejection of Claims 1-3, 5-10, and 14 under 35 USC §103(a) as being unpatentable over U.S. Patent number 5,147,739 (Beard) in view of U.S. Patent publication number 2002/0172862 (Tamura).**

Claims 1-3, 5-10, and 14 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent number 5,147,739 (Beard) in view of U.S. Patent publication number 2002/0172862 (Tamura).

**CLAIM 1**

*First Reason that Claim 1 is Patentable over the cited art.*

The Appeals Brief argues that Tamura is non-analogous art. In response, the Examiner's Answer appears to argue that primary batteries and secondary batteries are actually the same. To see this, note that the Examiner's Answer argues that if you just apply enough potential to a

primary battery it can be recharged. This argument appears to be addressing the first branch of the non-analogous art test. The first branch of the non-analogous art test is whether the Applicant and Tamura are in the same field of endeavor. Accordingly, the Examiner's Answer appears to be arguing that since primary batteries and secondary batteries are really the same, the Applicant and Tamura are in the same field of endeavor.

The argument that if you just apply enough potential to a primary battery it can be recharged ignores the potentially dangerous results of doing this. If this were reasonable and/or safe, then we could recharge the common DURACELL® and ENERGIZER® batteries that we find in our houses. What is **more important than the above comments** is that the Examiner's argument directly contradicts the practices of those skilled in the art. To see this, we need only look at the treatment of this subject by the inventors of the art cited by the Examiner. For instance, Tamura felt this distinction was so significant that he noted his chemistry is for secondary batteries in the Abstract and TWICE in the Title. For instance, Tamura's title is "Electrode for Lithium **Secondary** Battery and Lithium **Secondary** Battery." The Applicant states that his chemistry is for primary batteries and also notes this in the Title. For instance, the Applicant's title is "**Primary** Battery Having Sloped voltage Decay." If the Applicant and Tamura believed that primary batteries and secondary batteries were the same, they would not be placing this distinction prominently in the TITLE of the Patent Applications.

This distinction between primary and secondary batteries can also be found in the art that the Examiner applies to other rejections. For instance, in another rejection, the Examiner cites U.S. Patent Publication number 2003/0211383 (Munshi). Munshi's title is "**Primary** Lithium Batteries." Again, if Munshi believed that primary batteries and secondary batteries were the same, they would not be placing this distinction prominently in the TITLE of the Patent Application.

Beard even makes this distinction prominently in the Abstract. For instance, Beard's Abstract states that "both primary and secondary cells utilizing these anodes are described." If primary and secondary batteries are the simply interchangeable, then there would be no need for Beard to describe both a primary cell and a secondary cell.

Finally, the Examiner also cites U.S. Patent Publication number 2002/0004169 (Yamada) in another rejection. Yamada even more strongly distinguishes primary and secondary batteries. For instance, Yamada states the following "although a **secondary** cell is taken as an example in

the above-described embodiment, the present invention is not limited thereto, since *it may also be applied to a **primary cell***.” Accordingly, Yamada teaches that his invention can be extended from secondary batteries to primary batteries. If the inventors in Yamada believed that primary batteries and secondary batteries were the same, then there would be no need to make this statement. As a result, this statement is an acknowledgement that the extension of secondary battery technology to primary batteries is an extension of the invention outside of his field of endeavor.

Since the inventors in the art cited by the Examiner are treating primary batteries and secondary batteries as distinct battery types, an inventor in the field of primary batteries is in a different field of endeavor than an inventor in the field of secondary batteries. Further, since the Applicant is in the field of primary batteries but Tamura is in the field of secondary batteries, the **Applicant and Tamura are in different fields of endeavor and Tamura fails the first branch of the non-analogous art test.**

**The Examiner’s Answer does not appear to address the Applicant’s arguments regarding the second branch of the non-analogous art test. As a result, Tamura fails both the first and second branches of the non-analogous art test and is accordingly non-analogous art.**

*Second Reason that Claim 1 is Patentable over the cited art.*

The Appeals Brief presents another argument that Claim 1 is Patentable over the cited art. In particular, the Appeals Brief argues that “(t)he cited art does not teach or suggest every limitation of the battery recited in claim 1.”

The response of the Examiner’s Answer to this argument is unclear. First, the Examiner’s Answer states that “appellants state that the secondary reference to Tamura must teach the concentration gradient in the active material in a second medium.” This statement is a mis-characterization of the Applicant’s argument. The Appeals Brief argues that “the **cited art must teach or suggest** a gradient of an active material in a second medium.” The Appeals Brief then goes on to consider each piece of cited art individually. The examination of the art individually is followed by the consideration of the art in combination. There is nothing about this argument that requires that any particular teaching be found only in Tamura. Further, as is

proper for an obviousness rejection, this argument is based on the standard of teaches or **suggests** rather than simply teaching as is stated in the Examiner's Answer.

The Examiner's Answer is also unclear when it states the following:

Appellants should be aware that the grounds of rejection is not an anticipatory rejection, i.e. a rejection under 35 USC 102, the grounds of rejection is in fact an obviousness type rejection made under 35USC103(a).

In response to this comment, the Applicant has carefully reviewed the Appeals Brief and is not able to identify the source of this comment. The VERY FIRST THING the Appeals Brief sets forth in this argument is the relevant **obviousness** law. For instance, the third sentence of this argument includes the quotation that "**obviousness** requires a suggestion of all limitations in a claim" and cites the case. This same paragraph then notes that "the Board of Patent Appeals and Interferences continues to cite and apply this standard." The following paragraphs then apply this law to the current situation. As a result, the Applicant has presented an argument that is based ENTIRELY on an obviousness rejection.

As previously argued, when the above OBVIOUSNESS law is applied to claim 1, the cited art must teach or suggest a gradient of a **second active material in a second medium** that includes a second active material. The pending rejection analogizes Tamura's tin active materials to the claimed second active material. However, Tamura does not teach or suggests a gradient of Tamura's tin active material in a second medium. As a result, the pending rejection must be relying on the combination of Beard and Tamura.

In view of the above, we turn to the combination of Beard and Tamura. Applying the above law to the analogy to the claimed second active material shows that the **combination** of Beard and Tamura would properly support the rejection if Beard teaches or suggests tin oxide in a second medium in order to properly support the rejection. However, Beard does not provide any teachings or suggestions about tin active materials and accordingly, does not teach or suggest Tamura's tin active materials in a second medium. As a result, the combination of Beard and Tamura fails to teach or suggest every limitation of claim 1.

The argument set forth in the Examiner's Answer addresses a motivation for placing Tamura's tin active materials in a second medium. However, the Examiner's Answer provides no discussion of how the cited art **teaches or suggests** a gradient of an active material in a second medium that includes a second active material as is required to support this rejection.

Accordingly, even when considered in combination, the cited art does not teach every limitation of claim 1 and claim 1 is patentable over the cited art.

**5. Rejection of Claims 19-23, 25, 26, 29, 32, and 33 under 35 USC §103(a) as being unpatentable over Beard in view of U.S. Patent Publication number 2002/0004169 (Yamada).**

Claims 19-23, 25, 26, 29, 32, and 33 are rejected under 35 USC §103(a) as being unpatentable over Beard in view of U.S. Patent Publication number 2002/0004169 (Yamada).

**CLAIM 19**

*First Reason that Claim 19 is Patentable over the cited art.*

The Office Action argues that it would be obvious to use both LiSiO and SiO from Yamada as the active materials for the intercalating layer in Beard. The Appeals Brief requested the motivation for making this modification. In response, the Examiner's Answer changes the motivation from the previously argued motivation to the following:

The advantages to the negative electrode during discharge are to prevent the dissolution of the negative current collector, i.e. preventing deterioration during discharge of the battery. Therefore a skilled artisan would in fact be motivated to make the modification as already outlined in the grounds of rejection above.

Yamada does not attribute the prevention of dissolution to the use of LiSiO and SiO. Instead, Yamada attributes this benefit to the relationship of the potential between the negative current collector and "the first lithium compound" (see paragraph 36). The "first lithium compound" is defined in the Abstract as  $\text{Li}_x\text{M}_y\text{PO}_4$  where  $0 < x < 2$ ,  $0.8 < y < 1.2$ , .... Accordingly, neither LiSiO nor SiO qualifies as the "first lithium compound." As a result, Yamada does not teach that the prevention of dissolution results from the use of LiSiO and SiO. Since the prevention of dissolution is not result of using LiSiO and SiO, no motivation has been provide for the proposed modification. Claim 19 is patentable over the cited art for this reason alone.

*Second Reason that Claim 19 is Patentable over the cited art.*

The Appeals Brief presents another argument that Claim 19 is Patentable over the cited art. In particular, the Appeals Brief argues that “(t)he cited art does not teach or suggest each of the claim limitations.

The Examiner’s Answer follows the same pattern that was presented in response to the Applicant’s second reason for the patentability of claim 1 over the cited art. For instance, the Examiner’s Answer mis-states the Applicant’s argument and then seems to argue that the Applicant is applying anticipation standards rather than obviousness standards. However, the Appeals Brief applies the obviousness law described in the discussion of claim 1 to the limitations of claim 19. For instance, the Applicant argued that the cited art does not teach or suggest an anode having a second medium with LiSiO and SiO and a different chemical composition than a first medium.

As with claim 1, the argument set forth in the Examiner’s Answer concentrates on a motivation for making the proposed modification. However, the Examiner’s Answer provides no discussion of how the cited art **teaches or suggests** an anode having a second medium with LiSiO and SiO and a different chemical composition than a first medium **as is required to support this rejection** by both case law and the law being currently applied by the Board of Patent Appeals and Interferences. Accordingly, Since Beard in view of Yamada does not teach or suggest every element of claim 19, claim 19 is patentable over the cited art.



Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Travis Dodd', with a stylized, sweeping flourish extending to the right.

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